

October 8, 2003

Commissioners:

I am going to address the denial by industry that BPL will cause radio interference, and their continued denial despite evidence. They have not undertaken their own testing program for RFI.

Is Anything Being Done About RFI?¹

The inability of most electronic equipment to operate without disturbing another piece of electronic equipment has been known for decades. Numerous programs to study *electromagnetic compatibility* have been undertaken by military and by private industry. Much has been done to eliminate or reduce the effects of RFI in expensive military and aeronautical equipment; unfortunately ... the manufacturers of transmitting and industrial power equipment ... only include enough RFI filtering and suppression in their gear to satisfy the minimum requirements of the Federal Communications Commission. Obviously, a wide gap exists between these two design philosophies.

The nascent BPL industry has offered assurances as if they had conducted numerous programs to study *electromagnetic compatibility* such as have been undertaken by military and by private industry, when in fact their only concern has been adhering to Part 15, and they want that relaxed. It is the ARRL (and some others) that has taken it upon itself to run some tests, the results of which the BPL industry would like to suppress.

I am not even trying to hold industry to some exalted standard in testing, as even a simple test should demonstrate mucho BPL RFI.

The essence of the **laboratory experiment** is to observe the effects of manipulating one or more independent variables on one or more dependent variables. ... A **field experiment** is an attempt to apply the laboratory method to ongoing real-life situations. ... The researcher can study the changes in the dependent variables and can infer the direction of causality with some degree of confidence.²

The idea is to turn on a shortwave receiver--dependent variable--, look at its noise level with BPL--independent variable--off, then turn BPL on and see if the noise increases. The industry didn't even do that, or if they did, they are not publishing the results.

And is BPL management totally unaware of news in the world? They tell us other countries which tried BPL are happy with its

¹William Orr, W5SAI and William R. Nelson, WA6FQG, Interference Handbook © 1981 by Radio Publications, Inc., Published in 1993 by Radio Amateur Callbook, Lakewood, NJ. P. 12.

²Don Hellriegel, Texas A & M University, John W. Slocum, Jr., Southern Methodist University, and Richard W. Woodman, Texas A & M University, Organizational Behavior (St. Paul: West Pub., 1983) p44

interference results.

Telecommunications, August 9, 2002

Ministry of Public Management,
Home Affairs,
Posts and Telecommunications

Announcement of report by Power Line Communication Study Group

The MPHPT set up the Power Line Communication Study Group in April this year to investigate the possibilities of joint use along with existing radio communications, with regard to increasing used frequency bandwidth to increase speed of power line communications. The group's report has now been announced, and has determined that, at this stage, increasing the frequency bandwidth that is used in power line communications would be difficult, and proposed that qualification be put in place to implement feasibility tests in areas such as promoting modem research and development.

For details refer to the Japanese web site http://www.soumu.go.jp/s-news/2002/020809_4.html

Please refer questions concerning this press release to:

International Policy Division, International Affairs Department,
Telecommunications Bureau, Ministry of Public Management, Home Affairs, Posts
and Telecommunications.

Tel: (03) 5253-5920

Fax: (03) 5253-5924

feedback_e-telecom@soumu.go.jp

The JARL News 2000/05

The JARL NEWS

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**Japan's Government Concluded
It is not suitable to allow HF band for PLC**

PLC, a shortened form of the word "Power Line Communications" that intends to implement high rate Internet data transmission on existing electrical power lines, is an extremely important issue for amateur radio as it occurs between 2 MHz - 30 MHz, and HF reception can be seriously disturbed by such radiation.

JARL has been deeply concerned about PLC, and firmly expressed strong opposition to the Ministry of Public Management, Home Affairs, Posts and Telecommunications (MPHPT.)

On April 30, 2002, the Ministry's study group on PLC held its first public hearing with JARL, Association of Radio Industries and Business, and others. At the meeting, the results of collaborated field tests, which were held in January, 2002, were reported. The tests included monitoring leakage of electric waves from power lines -- specifically in cases of providing Internet access via power lines to homes.

In this way, JARL actively cooperated with the group. Even more, at the group's request, JARL dispatched one of its directors, Mr. Masao Matsumoto, JA1AYC, to Germany to conduct research on the PLC situation in Europe.

As a result, MPHPT's study group officially announced in its fifth meeting on July 31 that it is too early to allow PLC between 2 MHz and 30 MHz due to hazardous effects on HF users. This news was reported by major newspapers including *Yomiuri*, *Asahi* and *Mainichi*, as well as the major financial daily, *Nihon Keizai Shimbun*.

JARL President, Mr. Shozo Hara, JA1AN, said "JARL is glad that the Ministry's study group on PLC concluded that it is not suitable to allow PLC between 2 MHz and 30 MHz. However, we need to keep in mind that the future course of environmental demonstrative tests, their direction and international standards planning need to be watched very carefully."

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Now take the engineers at our BPL companies. Either they are totally ignorant of RFI matters, or their advice is being suppressed, or there is some kind of conspiracy of denial. Take a basic reference, **Electronics Engineer's Reference Book**.³

Noise and Communication by K R Sturley, PhD, BSc, FIEE, FIEEE
Telecommunications consultant

51.1 Interference and noise in communication systems

Information transmission accuracy can be seriously impaired by interference from other transmission systems and by noise. Interference from other transmission channels can usually be reduced to negligible proportions by proper channel allocation, by operating transmitters in adjacent or overlapping channels geographically far apart, and by use of directive transmitting and receiving aerials.

BPL interference puts us in the difficult position where proper channel allocation won't help as BPL covers the whole spectrum, it is geographically in ones own neighborhood, and if

³Published 1984, Boston: Butterworths

the noise is coming from the power lines strung in every direction, a directive antenna won't do any good.

51.2 Man-made noise

Man-made electrical noise is caused by switching surges, electrical motor and thermostat operation, insulator flash-overs on power lines, etc. It is generally transmitted by the mains power lines and its effect can be reduced by:

- (i) Suitable r.f. filtering at the noise source.
- (ii) Siting the receiver aerial well away from mains lines and in a position giving maximum signal pickup;
- (iii) Connecting the aerial to the receiver by a shielded lead.

This reference book was published in 1984 when we didn't have an internet whose distribution could cause radio interference, but the reference does allow for the etcetera, and that "information transmission accuracy can be seriously impaired by interference from other transmission systems," so radio reception being interfered with by internet data transmission is allowed for. Note where it says, "Man-made electrical noise ... is generally transmitted by the mains power lines," so how could the engineers think BPL would be a point source, not one radiated over the lines? It's right there in an engineer's standard reference book!

Let's look at the means to prevent interference, or reduce its effect, right from the engineer's reference book. "(i) Suitable r.f. filtering at the noise source." Well, here BPL won't do anything but make it worse. It injects its own signals into the mains, and when other sources of interference would normally have been blocked by the distribution transformer from radiating along the lines, that transformer is going to be bypassed for HF-VHF by a device to allow the BPL signal through.

"(ii) Siting the receiver aerial well away from mains lines and in a position giving maximum signal pickup." Well, since the mains lines will pass close to the home of the listener to shortwave, and then BPL will enter the house wiring itself, in the case of an apartment or the like, it will be rather difficult to do that. Add the high signal levels present, and we don't have a real solution.

"(iii) Connecting the aerial to the receiver by a shielded lead." Now, there's an idea. But if the feedline from the antenna needs to be shielded, then so does the feedline for the internet signal need to be shielded cable.

At any rate, since a standard engineer's reference tells about such RFI problems, how can the engineers say there is no interference potential if they haven't even done any tests, especially after technologically savvy Japan had to give up on BPL because of interference concerns?

What it comes down to is the FCC was presented with a bill of goods: a working demonstration of BPL *without* any HF receivers in the vicinity to clue you guys in. You were shown its benefits, not its terrible shortcomings.

July 23, 2003, 10:25 a.m.
Trojan Horse
The case against drug importation.
By Rep. Joseph R. Pitts⁴

In Homer's Iliad, the Trojan Horse was a hollow wooden horse in which several Greek soldiers hid to gain entrance to the city of Troy. The Trojans wheeled the horse into their city thinking it was a gift, not knowing the enemy lurked inside. At night the Greeks exited the horse, opened the city gates for the rest of their army, and conquered Troy.

Today, a Trojan Horse can be anything that poses as something good, but when let in, it does harm.

The Trojan Horse, *William Drummond* (1585-1649)

A horse I am, whom bit,
Rein, rod, nor spur, not fear;
When I my riders bear,
Within my womb, not on my back, they sit.
No streams I drink, nor care for grass nor corn;
Art me a monster wrought,
All nature's works to scorn.
A mother, I was without mother born;
In end all armed my father I forth brought;
What thousand ships, and champions of renown
Could not do free, I captive razed a town.

"What thousand ships, and champions of renown/ Could not do free, I captive razed a town." What engineers could never demonstrate BPL to be noninterference--, the BPL developers seek to accomplish through deception.

Tests for interference done by others show "Art me a monster wrought,/ All nature's works to scorn." BPL's interference generated, should it be implemented, would be monstrous, or as the ARRL characterized BPL in its comments in response to the FCC NOI, to mix mythology, "a Pandora's Box of unprecedented proportions."

It should in no way be allowed to proceed forward.

Respectfully Submitted,
Earl S. Gosnell III

⁴Rep. Joseph R. Pitts represents the Sixteenth Congressional District of Pennsylvania. He is a member of the House Energy and Commerce Committee and the Energy and Commerce Subcommittee on Health.